

## **APPENDIX I**

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Claims 23, 24, 30-32, 89, 90, 92, 93, 134-136, 138-143, and 145-148 are provided below.

23. A production tool suitable for use in manufacturing an abrasive article comprising a first, second, and third plurality of cavities, wherein the first plurality of cavities each have a first geometric shape and first plurality of angles forming the geometric shape, the second plurality of cavities each have a second geometric shape and second plurality of angles forming the geometric shape, and the third plurality of cavities each have a third geometric shape and third plurality of angles forming the geometric shape, wherein at least one of the angles of the first plurality is different from all of the angles of the second and third plurality of angles, wherein at least one of the angles of the second plurality is different from all of the angles of the first and third plurality of angles, and wherein each of the cavities has a single opening.

24. A production tool suitable for use in manufacturing an abrasive article comprising a first, second, third, and fourth plurality of cavities, wherein the first plurality of cavities each have a first geometric shape and first plurality of angles forming the geometric shape, the second plurality of cavities each have a second geometric shape and second plurality of angles forming the geometric shape, the third plurality of cavities each have a third geometric shape and third plurality of angles forming the geometric shape, and the fourth plurality of cavities each have a fourth geometric shape and fourth plurality of angles forming the geometric shape, wherein at least one of the angles of the first plurality is different from all of the angles of the second, third, and fourth plurality of angles, wherein at least one of the angles of the second plurality is different from all of the angles of the first, third, and fourth plurality of angles, wherein at least one of the angles of the third plurality is different from all of the angles of the first, second, and fourth plurality of angles, and wherein each of the cavities has a single opening.

30. A production tool suitable for use in manufacturing an abrasive article comprising a plurality of cavities defining at least a first, a second, and a third group, wherein a first group of cavities has a first shape, a second group of cavities has a second shape, a third group of cavities has a third shape, wherein the first, second, and third shapes are all different, and wherein each of the cavities has a single opening.

31. A production tool suitable for use in manufacturing an abrasive article comprising a plurality of cavities defining at least a first, a second, and a third group, wherein a first group of cavities has a first size, a second group of cavities has a second size, a third group of cavities has a third size, wherein the first, second, and third sizes are all different, and wherein each of the cavities has a single opening.

32. A production tool suitable for use in manufacturing an abrasive article comprising a plurality of cavities defined by substantially distinct and discernible boundaries which include substantially specific dimensions, wherein a first cavity has specific first dimensions, a second cavity has specific second dimensions, and a third cavity has specific third dimensions, each of said cavities has a boundary defined by at least four planar surfaces wherein adjacent planar surfaces of one cavity meet at an edge to define an angle of intersection therebetween, wherein at least one angle of intersection of said first cavity is different from all the angles of intersection of said second and third cavities, wherein at least one angle of intersection of said second cavity is different from all the angles of intersection of said first and third cavities, and wherein each of the cavities has a single opening.

89. The production tool of claim 23, wherein the first geometric shape includes a base and first plurality of base edge lengths, wherein the second geometric shape includes a base and second plurality of base edge lengths, wherein the third geometric shape includes a base and third

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plurality of base edge lengths, wherein at least one of the base edge lengths of the first plurality is different from all of the base edge lengths of the second and third plurality of base edge lengths, and wherein at least one of the base edge lengths of the second plurality is different from all of the base edge lengths of the first and third plurality of base edge lengths.

90. The production tool of claim 24, wherein the first geometric shape includes a base and first plurality of base edge lengths, wherein the second geometric shape includes a base and second plurality of base edge lengths, wherein the third geometric shape includes a base and third plurality of base edge lengths, wherein the fourth geometric shape includes a base and fourth plurality of base edge lengths, wherein at least one of the base edge lengths of the first plurality is different from all of the base edge lengths of the second, third, and fourth plurality of base edge lengths, wherein at least one of the base edge lengths of the second plurality is different from all of the base edge lengths of the first, third, and fourth plurality of base edge lengths, and wherein at least one of the base edge lengths of the third plurality is different from all of the base edge lengths of the first, second, and fourth plurality of base edge lengths.

92. A production tool suitable for use in manufacturing an abrasive article comprising a first, second, and third plurality of cavities, wherein the first plurality of cavities each have a first geometric shape including a base and first plurality of base edge lengths forming the base of the geometric shape, the second plurality of cavities each have a second geometric shape including a base and second plurality of base edge lengths forming the base of the geometric shape, and the third plurality of cavities each have a third geometric shape including a base and third plurality of base edge lengths forming the base of the geometric shape, wherein at least one of the base edge lengths of the first plurality is different from all of the base edge lengths of the second and third plurality of base edge lengths, wherein at least one of the base edge lengths of the second plurality is different

from all of the base edge lengths of the first and third plurality of base edge lengths, and wherein each of the cavities has a single opening.

93. A production tool suitable for use in manufacturing an abrasive article comprising a first, second, third, and fourth plurality of cavities, wherein the first plurality of cavities each have a first geometric shape including a base and first plurality of base edge lengths forming the base of the geometric shape, the second plurality of cavities each have a second geometric shape including a base and second plurality of base edge lengths forming the base of the geometric shape, the third plurality of cavities each have a third geometric shape including a base and third plurality of base edge lengths forming the base of the geometric shape, and the fourth plurality of cavities each have a fourth geometric shape including a base and fourth plurality of base edge lengths forming the base of the geometric shape, wherein at least one of the base edge lengths of the first plurality is different from all of the base edge lengths of the second, third, and fourth plurality of base edge lengths, wherein at least one of the base edge lengths of the second plurality is different from all of the base edge lengths of the first, third, and fourth plurality of base edge lengths, wherein at least one of the base edge lengths of the third plurality is different from all of the base edge lengths of the first, second, and fourth plurality of base edge lengths, and wherein each of the cavities has a single opening.

134. The production tool of claim 92, wherein the first, second, and third geometric shapes are pyramidal.

135. The production tool of claim 92, wherein the first, second, and third geometric shapes are truncated pyramidal.

136. A production tool suitable for use in manufacturing an abrasive article comprising a first, second, and third row of cavities, wherein the cavities each have a geometric shape including a base and a plurality of base edge lengths forming the base of the geometric shape, wherein at least one of the base edge lengths of the first row of cavities is different from all the base edge lengths of the second and third rows of cavities, wherein at least one of the base edge lengths of the second row of cavities is different from all the base edge lengths of the first and third row of cavities, and wherein each of the cavities has a single opening.
138. The production tool of claim 136, wherein the geometric shape of the cavities in the first, second, and third rows are pyramidal.
139. The production tool of claim 136, wherein the geometric shape of the cavities in the first, second, and third rows are truncated pyramidal.
140. The production tool of claim 136, wherein the first, second, and third rows of cavities extend in parallel to one another.
141. The production tool of claim 136, wherein the base edge lengths of the first row of cavities have a first base edge length extending parallel to the first row and a second base edge length extending perpendicular to the first row, and wherein the second base length of all the cavities in the first row is the same.
142. The production tool of claim 141, wherein at least some of the first base lengths of the cavities in the first row are different from one another.

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143. A production tool suitable for use in manufacturing an abrasive article comprising first, second, and third cavities, wherein the first cavity has a first geometric shape including a base and a first plurality of base edge lengths forming the base of the geometric shape, the second cavity has a second geometric shape including a base and a second plurality of base edge lengths forming the base of the geometric shape, and the third cavity has a third geometric shape including a base and a third plurality of base edge lengths forming the base of the geometric shape, wherein at least one of the base edge lengths of the first plurality of base edge lengths is different from all the base edge lengths of the second and third plurality of base edge lengths, wherein at least one of the base edge lengths of the second plurality of base edge lengths is different from all the base edge lengths of the first and third plurality of base edge lengths, and wherein each of the cavities has a single opening.

145. The production tool of claim 143, wherein the geometric shapes of the first, second, and third cavities are pyramidal.

146. The production tool of claim 143, wherein the geometric shapes of the first, second, and third cavities are truncated pyramidal.

147. The production tool of claim 143, wherein the first cavity is located adjacent to the second cavity.

148. The production tool of claim 147, wherein the second cavity is located adjacent to the third cavity.